

Remark

Applicants respectfully request reconsideration of this application as amended. Claims 1, 11, 16 and 23 have been amended. No claims have been canceled. Therefore, claims 1-25 are now presented for examination.

35 U.S.C. §103 Rejection

Narayanaswami

The Examiner has rejected claims 1-25 under 35 U.S.C. §103 (a) as being unpatentable over Narayanaswami et al., U.S. Patent Publication No. 2003/0011684 ("Narayanaswami"). In the final Office action, the Examiner maintained the rejection based on Narayanaswami, which describes watermarking a photograph with location information and then comparing the watermark in a stored image with a separately stored location file to measure the authenticity of the stored image.

A. First Frame of a Sequence and a Later Current Frame

The Examination of this application appears to have been confused as to how the "current state of the auxiliary information" compares to the "auxiliary information regarding a current video frame." In order to help eliminate this confusion, the first term has been tied expressly to the first frame of the sequence and the second term has been tied to a later frame of the sequence.

In the reference, the watermark and the separate file must be about the same image in order for the authentication process to work. In the present invention, the two kinds of auxiliary information must be about different frames for the differential information to be worth annotating.

B. Sequence of Video Frames

The Examiner's attention is first pointed to the recitations in the claims of "sequence of video frames." The reference concerns only single images, not a sequence of video frames. The Examiner has not presented any reason why it would be obvious to adapt a single image watermarking system to a "sequence of video frames."

This difference can be brushed aside, but for obviousness, the modification to the reference must be consistent with the purpose of the reference. The reference is concerned with authenticating an image. A similar approach could perhaps be used to authenticate a video, although there is nothing in the reference or cited prior art to motivate such a change. However, if the approach in the reference is modified as the Examiner suggests, then the annotation could not be used for authentication. This is in part because the information in the claims is about different frames.

C. Determine Differential Information

The Examiner's attention is next pointed to the recitations in the claims of "to determine differential information." The Examiner asserts that the reference teaches comparing the specified parameters in order to determine any differences between them. In fact, the reference simply states, "The extracted stamping information will then be compared with the corresponding parameters that were recorded... when the image was captured." "If the recorded parameters match the extracted watermarked parameters..., the authenticity of the image is verified." (para. 51) So the reference simply compares to determine if there is a match. It does not determine what the differences are. "Differential information" is information about a difference not "match/no match."

The Examiner has also developed an alternative theory about the differential information. In the above paragraph, the difference is between the watermark and the

separate location file. The Examiner alternatively points to para. 35 which mentions how the GPS receiver in the camera is augmented by an accelerometer. GPS uses frequencies that are easily blocked by buildings, bridges and even dense trees. Many GPS systems accordingly use accelerometers to allow them to continue to determine position while the GPS signals are blocked. For a system that would be affordable for a camera, the accelerometer-determined position would become unreliable after the camera moves through less than a hundred meters or so, but by then the GPS signal might become available again.

In this reading by the Examiner, the "current state of auxiliary information" is the camera's most recent GPS position determination. However, this information is not "regarding a first frame of a sequence of video frames," as recited in the claims, even if a single frame is considered to be equivalent to a sequence of video frames. The GPS position is simply the last camera position that is determined by the GPS. It is very unlikely that a photograph was taken just before the camera lost the GPS signals. This would tend to correspond with going through a doorway, or under a bridge. The GPS position has no direct connection with the photographs and while it is saved in the GPS receiver, it is not saved in the photographs.

In this reading, the "auxiliary information regarding a later current video frame" is the camera's later accelerometer position determination made about when a picture is taken. About this, the reference states "computing the displacement... so that the position of the camera 100 may be accurately recorded." In other words, the displacement of the camera from its last known position is determined, however, this is not recorded. The position of the camera is recorded. Claim 1, however, states "annotating the differential information to the video bit stream." This is a clear

difference and there is nothing in the reference nor in the cited art that would lead a person of average skill to record the displacement rather than the actual position.

D. Annotating the Differential Information

Finally, the Examiner's attention is drawn to the recitation regarding "annotating the differential information." In the Response to Arguments, the Examiner argues that "if the differences are annotated then the claims adjuster can determine from the annotation whether the image was modified." The reference states only that if there is a match the authenticity is verified. If there is not a match, then the image has been modified or was not taken at the corrected location.

Annotating the information to an image will not help the claims adjuster. On the contrary, the reference is about extracting annotations so that they can be compared. Recording the differences between the two annotations might be of some value, although such a thing is not in the reference, but recording the differences by annotating them to a video bit stream would not make the information easier to find.

Applicants have previously stated that there would be no reason apart from the present invention to annotate the differential information to a video bit stream. The Examiner simply states that "if the differences are annotated then the claims adjuster can determinewhether the image was modified." Of course, this determination is made by comparing the information. Annotating an image with the differential information does not further that purpose. If there were an annotation it would more likely be an "authentic" or "not authentic" annotation.

Alternatively, the Examiner argues that differential information would be annotated "to ensure the correct parameter information (video information) would be accurately recorded." This reason has nothing to do with annotating the information but

only to do with calculating the information. The reference ensures the correct location by recording the actual accelerometer-based position determination. The difference between the last position and the current position is not annotated to the next picture. Doing so would not be obvious because then the prior image would always be required in order to determine the position of the current image. With still images, as in the reference, this would not be convenient. It would also affect the watermarking authentication process. If the location for one image was not authentic, then the next image could not be verified.

In sum, the reference does not show "a sequence of video frames," "determining differential information," nor "annotating the differential information to the video bit stream." The Examiner has said that it would be obvious to apply the reference to video frames, to determine a difference between either two camera positions or between a watermark and a separate image file, and to annotate the determined difference to a video bit stream. However, there is no cogent reason provided for this other than hindsight based on the present disclosure. For annotating the difference, there is not only no cogent reason, it would destroy the operation of the reference.

D. Construction of the Reference

Even assuming that the Examiner's position is correct, the proposed modification to the reference would destroy its operation. The reference records a watermark in an image so that the watermark can later be compared to a separate file to determine whether the image is authentic. The watermark is an indication of the position of the camera when the image was taken.

In short, the reference requires that the two pieces of information match. Otherwise, there can be no authentication. In the claims, the two pieces of information are about different frames. Therefore, the information cannot be used for verification.

Even construing the claims liberally to meet the pending claims, the operation of the reference is adapted so that an indication of a position of the camera is annotated into a sequence of video frames. In one interpretation asserted by the Examiner, a current state of camera location is compared to a camera location regarding a current frame. The difference is annotated to the video bit stream.

If the current state of camera location is a separate file that is compared to a watermark, then after the authentication determination, the video bit stream is annotated with difference calculations that serve no purpose.

If instead, the current state of camera location is the GPS location and the video bit stream is annotated with the camera's displacement from that location, then the actual position of the current frame becomes difficult to determine and there is no way to do authentication.

In sum, there is no logical way to stretch the reference so that it makes any sense to annotate the video bit stream with difference information. This is because the purpose of the reference is only to compare information to determine authenticity. The purpose of the present invention is to store the difference information with the video. This reduces the total amount of information to be stored.

Conclusion

Applicants respectfully submit that the rejections have been overcome by the amendment and remark, and that the claims as amended are now in condition for allowance. Accordingly, Applicants respectfully request the rejections be withdrawn and the claims as amended be allowed.

Invitation for a Telephone Interview

The Examiner is requested to call the undersigned at (303) 740-1980 if there remains any issue with allowance of the case.

Request for an Extension of Time

Applicants respectfully petition for an extension of time to respond to the outstanding Office Action pursuant to 37 C.F.R. § 1.136(a) should one be necessary. Please charge our Deposit Account No. 02-2666 to cover the necessary fee under 37 C.F.R. § 1.17(a) for such an extension.

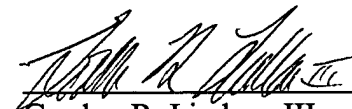
Charge our Deposit Account

Please charge any shortage to our Deposit Account No. 02-2666.

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP

Date: March 31, 2008



Gordon R. Lindeen III
Reg. No. 33,192

1279 Oakmead Parkway
Sunnyvale, California 94085
(303) 740-1980